

REMARKS

The Office Action rejects claims 13, 14, and 20 under 35 U.S.C. § 102(e) as being allegedly anticipated by WU (U. S. Pub. No. 2004/0048424), with evidence provided by WOLF ("Silicon Processing for the VLSI Era"); rejects claims 1-12 and 15-19 under 35 U.S.C. § 103(a) as being unpatentable over WU in view of FRENETTE (U. S. Pat. No. 5,770,490), with evidence provided by WOLF. Applicants respectfully traverse these rejections.¹

By this Amendment, claims 1, 7, and 13 are amended. The support for changes to the claims can be found in paragraph 0023, paragraph 0024, Fig. 4 and Fig. 6 of the instant specification.

Claims 1-20 are pending.

I. Claims 13, 14, and 20 are not anticipated by WU under 35 U.S.C. § 102(e), with evidence provided by WOLF

The Office Action rejects claims 13, 14, and 20 under 35 U. S. C. § 102(e) as allegedly being anticipated by WU, with evidence provided by WOLF. Applicants respectfully submit that WU does not anticipate claims 13, 14, and 20.

A proper rejection under 35 U.S.C. § 102 requires that a single reference teach every aspect of the claimed invention. Any feature not directly taught must be inherently

¹ As Applicants' remarks with respect to the Office Action's rejections are sufficient to overcome these rejections, Applicant's silence as to assertions by the Office Action or certain requirements that may be applicable to such rejections (e.g., whether a reference constitutes prior art, motivation to combine references, etc.) is not a concession by Applicants that such assertions are accurate or such requirements have been met, and Applicants reserve the right to analyze and dispute these assertions/requirements in the future.

present. See M.P.E.P. § 2131. WU does not disclose the combination of features recited in claims 13, 14, and 20.

For example, amended claim 13 recites “a method for doping fin structures in FinFET devices, comprising: forming a first glass layer on the fin structures of a first area and a second area; removing the first glass layer from the second area; forming a second glass layer on the fin structures of the first area and the second area; and annealing the first area and the second area to dope the fin structures of the first area and the second area, the annealing occurring prior to forming a gate electrode.” WU does not disclose or suggest at least one of these features.

For example, WU does not disclose or suggest annealing the first area and the second area to dope the fin structures of the first area and the second area, where the annealing occurs prior to forming a gate electrode, as recited in claim 13.

WU discloses, in Figs. 1, 2, 3A-9A and in accompanying paragraphs 0015-0024, steps for forming a gate structure and annealing. WU specifically discloses that the annealing is performed *after* forming the gate structure (see, for example, Figs. 7A-9B and the accompanying description, which specifically discloses the formation of glass layers after the gate structure is formed and the annealing occurring after the formation of glass layers). WU does not describe any steps in which annealing is performed prior to forming the gate structure. Accordingly, Applicants assert that WU does not disclose or suggest annealing occurring prior to forming a gate electrode, as recited in claim 13.

WOLF disclosure does not remedy the above deficiencies in WU disclosure.

In view of the above, Applicants respectfully submit claim 13 is not anticipated by WU, with evidence provided by WOLF.

Claims 14 and 20 depend from claim 13, and therefore, are also not anticipated by WU, with evidence provided by WOLF, for at least for the reasons given above with respect to claim 13.²

II. Claims 1-12 and 15-19 are patentable over WU in view of FRENETTE under 35 U.S.C. § 103(a), with evidence provided by WOLF

The Office Action rejects claims 1-12 and 15-19 under 35 U. S. C. § 103(a) as allegedly being unpatentable over WU in view of FRENETTE, with evidence provided by WOLF. Applicants submit that claims 1-12 and 15-19 are patentable over WU, FRENETTE, and WOLF.

For example, amended claim 1 recites “a method for forming FinFET devices, comprising: forming a first fin structure, a source region, and a drain region in a first area of a wafer; forming a second fin structure, a source region, and a drain region in a second area of the wafer; forming a phosphosilicate glass layer on the first area and the second area, the phosphosilicate glass layer being formed adjacent to at least one of a top surface or a side surface of the first fin structure; removing the phosphosilicate glass layer from the second area; forming a boron silicate glass layer on the first area and the second area;

² As Applicants' remarks with respect to the base independent claims are sufficient to overcome the Office Action's rejections of all claims dependent therefrom, Applicants' silence as to the Office Action's assertions with respect to dependent claims is not a concession by Applicants to the Office Action's assertions as to these claims, and Applicants reserve the right to analyze and dispute such assertions in the future.

annealing the first area and the second area, the annealing causing the first fin structure, source region, and drain region of the first area to be doped with phosphorus and causing the second fin structure, source region, and drain region of the second area to be doped with boron; removing the boron silicate glass layer from the first area and the second area; and removing the phosphosilicate glass layer from the first area.” WU and FRENETTE, and WOLF, individually or in combination, do not disclose or suggest at least one of the recited features.

For example, WU, FRENETTE, and WOLF do not disclose or suggest “the phosphosilicate glass layer being formed adjacent to at least one of a top surface or a side surface of the first fin structure,” as recited in claim 1.

At Fig. 8a and at paragraph 0022, WU discloses deposition of phosphosilicate glass. As illustrated in Fig. 8a, WU discloses that gate structure 8 is formed on a top surface of the fin structure (this is consistent with the analysis in the decision by the Board of Appeals, mailed on April 21, 2006) and that the phosphosilicate glass layer is formed on a top surface of gate structure 8. The gate structure, therefore, is interposed between the phosphosilicate glass layer and the fin structure. Therefore, in WU, the phosphosilicate glass layer is not formed adjacent to the fin structure. Accordingly, Applicants submit WU does not disclose or suggest the phosphosilicate glass layer being formed adjacent to at least one of a top surface or a side surface of the first fin structure, as recited in claim 1.

Regarding FRENETTE, Applicants have reviewed FRENETTE in its entirety, and Applicants assert that FRENETTE does not disclose or suggest any feature related to

FinFET structures, including the phosphosilicate glass layer being formed adjacent to at least one of a top surface or a side surface of the first fin structure, as recited in claim 1.

In view of the above, Applicants submit that WU and FRENETTE, individually or in combination, do not disclose or suggest forming a phosphosilicate glass layer on the first area and the second area, the phosphosilicate glass layer being formed adjacent to at least one of a top surface or a side surface of the first fin structure, as recited in claim 1.

WOLF disclosure does not remedy the above deficiencies in WU disclosure and FRENETTE disclosure.

Accordingly, Applicants submit that claim 1 is patentable over WU in view of FRENETTE, with evidence provided by WOLF.

Claims 2-6 depend from claim 1. Therefore, these claims are patentable over WU in view of FRENETTE, with evidence provided by WOLF, for at least the reasons given above with respect to claim 1.

Amended claim 7 recites “a method for doping a fin structure and source and drain regions in FinFET devices, comprising: forming a first glass layer on the fin structure and source and drain regions of an N-channel device and a P-channel device; removing the first glass layer from the P-channel device; forming a second glass layer on the fin structure and source and drain regions of the N-channel device and the P-channel device, the second glass layer being different than the first glass layer; and annealing the N-channel device and the P-channel device to uniformly dope the fin structure and to dope source and drain regions of the N-channel device and the P-channel device.” WU,

FRENETTE, and WOLF, individually or in combination, do not disclose or suggest at least one of the recited features.

For example, WU, FRENETTE, and WOLF do not disclose or suggest “annealing the N-channel device and the P-channel device to uniformly dope the fin structure.” The Office Action asserts “annealing the N-channel device and the P-channel device to dope the fin structure” is inherent in WU (pg. 8, Office Action).

Applicants submit that lateral diffusion of dopants does not *uniformly* dope the fin structure, and therefore, that annealing the N-channel device and the P-channel device to *uniformly* dope the fin structure is not an inherent feature in WU.

Regarding FRENETTE, Applicants have reviewed FRENETTE in its entirety and Applicants assert that FRENETTE does not disclose or suggest any process or feature related to FinFET structure, including annealing the N-channel device and the P-channel device to *uniformly* dope the fin structure, as recited in claim 7.

In view of the above, Applicants assert that WU and FRENETTE, individually or in combination, do not disclose or suggest annealing the N-channel device and the P-channel device to *uniformly* dope the fin structure, as recited in claim 7.

WOLF disclosure does not remedy the above deficiencies in WU disclosure and FRENETTE disclosure.

Accordingly, Applicants submit that claim 7 is patentable over WU in view of FRENETTE, with evidence provided by WOLF.

Claims 8-12 depend from claim 7. Therefore, these claims are patentable over WU in view of FRENETTE, with evidence provided by WOLF, for at least the reasons given above with respect to claim 7.

Claims 15-19 depend from claim 13. The disclosure of FRENETTE does not remedy the deficiencies in the disclosure of WU set forth above with respect to claim 13. Therefore, claims 15-19 are patentable over WU and FRENETTE, with evidence provided by WOLF, whether taken alone or in any reasonable combination, for at least the reasons given above with respect to claim 13.

III. Conclusion

In view of the foregoing amendments and remarks, Applicants respectfully request the reconsideration of this application, and the timely allowance of the pending claims.

To the extent necessary, a petition for an extension of time under 37 C.F.R. § 1.136 is hereby made. Please charge any shortage in fees due in connection with the filing of this paper, including extension of time fees, to Deposit Account No. 50-1070 and please credit any excess fees to such deposit account.

Respectfully submitted,

HARRITY SNYDER, L.L.P.

By: /John E. Harrity/
John E. Harrity
Registration No. 43,367

Date: September 26, 2006

11350 Random Hills Road
Suite 600
Fairfax, Virginia 22030
(571) 432-0800

Customer Number: 45114